Data Sheet (Cat.No.TMPY-00689)

Carbonic Anhydrase 9 Protein, Human, Recombinant (hFc)

General Information

Synonyms:	CA 9;CAIX;CA9;Carbonic Anhydrase IX;MN
Protein Construction:	A DNA sequence encoding the human carbonic anhydrase IX (CA9) precursor (NP_001207.2) (Met 1-Asp 414) was fused with the Fc region of human IgG1 at the C-terminus. Predicted N terminal: Gln 38
Species:	Human
Expression Host:	HEK293 Cells
Accession:	Q16790
Molecular Weight:	67.7 kDa (predicted); 80-90 kDa (reducing condition, due to glycosylation)

QC Testing

Biological Activity:	Measured by its esterase activity. The specific activity is >50 pmoles/min/μg, as measured with 1 mM 4-Nitrophenyl acetate and 1 μg enzyme at 400 nm in 100 μL of 12.5 mM Tris, 75 mM NaCl, pH 7.5.
Purity:	> 90 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing 100 mM Glycine, 10 mM NaCl, 50 mM Tris, pH 7.5. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Carbonic anhydrases IX (CA IX), also known as membrane antigen MN or CA9, is a member of the carbonic anhydrase (CA) family and may be involved in cell proliferation and cellular transformation. CAs are zinc metalloenzymes that catalyze the reversible hydration of carbon dioxide ($H_2O + CO_2 = H^+ + HCO_3^-$) and thus

participate in a variety of biological and physical processes. CA IX protein is expressed primarily in carcinoma cells lines, and the expression is cell density dependent and has been shown to be strongly induced by hypoxia, accordingly facilitates adaptation of tumor cells to hypoxic conditions. It is involved in tumorigenesis through many pathways, such as pH regulation and cell adhesion control. CA IX is used as a marker of tumor hypoxia and as a new therapeutic target for many human carcinomas and cancers.Cancer ImmunotherapyImmune CheckpointImmunotherapyTargeted Therapy

Reference

Loncaster JA,et al.(2001) Carbonic anhydrase (CA IX) expression, a potential new intrinsic marker of hypoxia: correlations with tumor oxygen measurements and prognosis in locally advanced carcinoma of the cervix. Cancer Res. 61(17): 6394-9.

Zvada J,et al.(2003) Soluble form of carbonic anhydrase IX (CA IX) in the serum and urine of renal carcinoma patients. Br J Cancer. 89(6): 1067-71.

Pan P,et al.(2006) Carbonic anhydrase gene expression in CA II-deficient (Car2-/-) and CA IX-deficient (Car9-/-) mice. J Physiol. 571(Pt 2): 319-27.

Zhou GX,et al.(2010) Quantification of carbonic anhydrase IX expression in serum and tissue of renal cell carcinoma patients using enzyme-linked immunosorbent assay: prognostic and diagnostic potentials. Urology. 75 (2): 257-61.